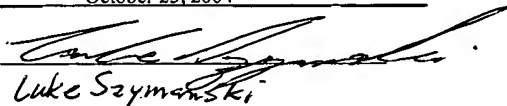


PATENT

Attorney Docket No.: A-72315-1/DJB/THR

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

<p>Re application of:</p> <p>Hermessec et al</p> <p>Serial No.: 10/823,523</p> <p>Filing Date: April 12, 2004</p> <p>Title: WOOD PRODUCTS AND PROCESSES FOR THE PREPARATION THEREOF</p>	<p>Group Art Unit: 1733</p> <p>Examiner: To be assigned</p> <p><u>CERTIFICATE OF MAILING</u></p> <p><u>UNDER 37 C.F.R. § 1.8 - FIRST CLASS MAIL</u></p> <p>I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450, on:</p> <p>October 25, 2004</p> <p>Signed:  Luke Szymanski</p>
---	---

PETITION UNDER 37 C.F.R. § 1.47(a)

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The following is a petition under 37 C.F.R. § 1.47(a) to accept the enclosed declaration, which is missing the signature of one of the co-inventors. Applicants enclose a fee of \$130.00 as required under 37 C.F.R. § 1.17(h) in support of this petition.

The Commissioner is authorized to charge any additional fees which may be required or credit any overpayment to Deposit Account No. 50-2319 (Order No.A-72315/DJB/THR (463037-00192)).

10/29/2004 RMEBRAHT 00000053 10823523

01 FC:1460

130.00 00

Upon information and belief, the subject matter of the application was invented by BRANKO HERMESCEC, NELI DRVODELIC, BARRY SHEARER, DAVID BUTT, BRETT SKEWES (the 'inventors') while employed by the University of Melbourne. Inventors N. Drvodelic, B. Shearer and D. Butt have signed the declaration for the application and assignment of the application to the University of Melbourne. A copy of the Assignment is presented in Exhibit B.

The present application is a continuation of the International Application PCT/AU01/01558 filed November 30, 2001, based on Australian patent application PR 1831, filed December 1, 2000. The International Application listed two additional inventors in addition to B. Hermescec, N. Drvodelic, B. Shearer and D. Butt. These two inventors, S. Przewloka and R. Shearer were subsequently deleted from the International Application.

The International Application PCT/AU01/01558 was prepared with the assistance (including scientific input and/or data) from the inventors, including Dr. Branko Hermescec. Dr. Hermescec subsequently left his position at the University of Melbourne.

The following facts are set forth in a declaration executed April 8, 2004 by Roberta Stead, Assistant to MFG Dean, Intellectual Property Officer, at the University of Melbourne, Victoria, Australia. The declaration is attached. On July 6, 2003, Ms. Stead contacted Branko Hermescec by telephone to inform him that formal documents relating to the present patent application were going to be sent to him for his signature. Dr. Hermescec informed Ms. Stead that he would not sign any documents relating to the patent application but did provide her his current address for mailing of the papers. File notes memorializing the content of this conversation are presented in Exhibit A. The formal documents were sent to Dr. Hermescec on August 8, 2003. Copies of the documents sent to Dr. Hermescec are attached as Exhibit B. Dr. Hermescec received the documents on August 18, 2003 as evidenced by his signature on the Delivery Confirmation-Advice Receipt, a copy of which is attached as Exhibit C.

After receiving the formal documents, Dr. Hermescec contacted Ms. Stead by telephone and informed her that he would not sign any documents relating to patent applications in which the company Carter Holt Harvey had intellectual property rights. Carter Holt Harvey has certain rights in the present application. He also indicated his intention to seek an injunction to prevent

the furtherance of prosecution of the present application. File notes memorializing the content of this conversation are presented in Exhibit D.

On August 27, 2003, Ms. Stead had a meeting with Dr. Hermescec. During the meeting, Dr. Hermescec confirmed his refusal to sign any documents relating to the prosecution of the present application. Again he reiterated his intent to prevent the furtherance of prosecution of the present application. File notes memorializing the content of this conversation are presented in Exhibit E.

Exhibit F is a copy of a letter from Dr. Hermescec dated August 28, 2003 reiterating his refusal to sign any documents relating to the prosecution of the present application. He stated that it is his intent to interfere with the prosecution of the present application by refusing to sign the power of attorney and Deed of the Assignment under a belief that such refusal would effectively stop prosecution of the present patent.

Exhibit G is a copy of a letter from Ms. Stead to Dr. Hermescec dated February 18, 2004, again requesting that he sign the documents sent to him in July 2003. Dr. Hermescec has not responded to this letter.

Exhibit H is a copy of a letter from Ms. Stead to Dr. Hermescec dated March 25, 2004 forwarding a copy of the PCT/AU01/01558 application and a Declaration for United States Utility Patent for Dr. Hermescec's signature. Petitioner notes that the Declaration is for the application United States Serial Number 10/433,067. The content of United States Serial Number 10/433,067 is identical to the content of the present application. United States Serial Number 10/433,067 was an application filed under 35 U.S.C. §371 as the United States national stage application from PCT/AU01/01558. United States Serial Number 10/433,067 was abandoned for failure to timely respond to the Notification of Missing Requirements under 35 U.S.C. §371. Petitioner filed the present application prior to the abandonment United States Serial Number 10/433,067 as a continuation of the PCT/AU01/01558 application. Because the content of United States Serial Number 10/433,067 is identical to the content of the present application, the documents in support of the present Petition are equally as applicable to the present application.

Dr. Hermescec confirmed that he received the patent application and formal documents in a telephone conversation with Ms. Stead, as memorialized in Exhibit I.

To date, Dr. Hermescec has not signed or returned the formal documents sent to him in August of 2003 or March 2004. Exhibit J is a copy of Dr. Hermescec's offer of employment with the University of Melbourne. Also in Exhibit J is a copy of the University of Melbourne's Intellectual Property policy requiring employees to assign the rights to intellectual property created in pursuance of their employment to the University. See Section 14.1.6.

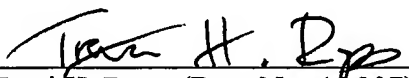
Accordingly, as required by 37 C.F.R. §1.47 and M.P.E.P. §409.03(d), the Petitioner has met the requirements for proving a refusal to sign the Declaration.

The remaining inventors have executed the Declaration and have left the signature block for Branko Hermescec blank. Petitioner asserts that by doing so, the inventors have signed the Declaration on behalf of the non-signing inventor, Dr. Hermescec. M.P.E.P. §409.03(a).

Dr. Hermescec currently resides at 22A Cornelius Street, Dandenogn , V. C. , 3175, Australia.

Respectfully submitted,

DORSEY & WHITNEY LLP


Traci H. Ropp (Reg. No. 44,307)

Dated: October 25, 2004

Four Embarcadero Center, Suite 3400
San Francisco, California 94111-4187
Tel: (415) 781-1989
Fax: (415) 398-3249

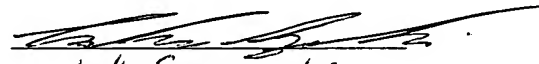
Filed Under 37 C.F.R. § 1.34(a)
Customer No. 32940



(C)

PATENT
Attorney Docket No.: A-72315/DJB/THR

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

<p>In re application of:</p> <p>Hermessec et al</p> <p>Serial No.: 10/433,067</p> <p>Intl. Filing Date: November 30, 2001</p> <p>Title: WOOD PRODUCTS AND PROCESSES FOR THE PREPARATION THEREOF</p>	<p>Group Art Unit: To be assigned</p> <p>Examiner: To be assigned</p> <p><u>CERTIFICATE OF MAILING</u></p> <p><u>UNDER 37 C.F.R. § 1.8 - FIRST CLASS MAIL</u></p> <p>I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450, on:</p> <p><u>Oct 25</u>, 2004</p> <p>Signed:  Luke Szymanski Traei H. Ropp</p>
---	--

DECLARATION OF ROBERTA STEAD UNDER 37 CFR. §1.47(a)

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Roberta Stead, declare that:

1. In my position as assistant to Mr. MFG Dean, Intellectual Property Officer for the University of Melbourne, it is one of my duties to obtain the signatures of inventors on various documents used in the filing of University of Melbourne patent applications.
2. On July 6, 2003, I contacted Branko Hermessec by telephone to inform him that I would be sending him documents in connection with his Patent Application Serial No. 10/7433,067 entitled "Wood Products and Processes for the Preparation Thereof", including a

Power of Attorney form and the Deed of Confirmation and Assignment. I requested he sign and return the documents to me. Dr. Hermessec responded that he would not sign the documents. However, he said he would look at the documents and then contact me with his response. He provided me with the following home address : 22A Cornelius Street, Dandenong , VIC. , 3175, Australia. Notes memorializing this conversation are attached as Exhibit A.

3. I sent the Power of Attorney and the Deed of Confirmation and Assignment to the address provided by Dr. Hermessec via registered mail on August 8, 2003. Delivery confirmation was received indicating that the documents were delivered on August 18, 2003. The Delivery receipt was signed by Dr. Hermessec. Copies of the documents sent to Dr. Hermessec are attached as Exhibit B. A copy of the Delivery Confirmation-Advice Receipt is attached as Exhibit C.

4. On August 19, 2003, Dr. Hermessec called me to discuss the application and documents. He stated that he had strong objections to the ownership of the application by Carter Holt Harvey and that he would not sign any documents relating to intellectual property owned by Carter Holt Harvey. File notes memorializing the content of this conversation are presented in Exhibit D.

5. On August 27, 2003, I met in person with Dr. Hermessec. At this time he confirmed that he would not sign any documents related to the present application. He stated that he was upset that the company that originally had rights to the patent, Lignotek, had been dismantled. As a result, many people, including his graduate student, had lost their jobs. He stated that he would seek means to stop the process of applying for the patent application in the United States including contacting the Patent Office and seeking an injunction. File notes memorializing the content of this conversation are presented in Exhibit E. .

6. I received a letter from Dr. Hermessec dated August 28, 2003. In this letter, Dr. Hermessec acknowledged receipt of the documents related to the prosecution of the present patent application. He also confirms that he will not sign any document related to the prosecution of the patent application. A copy of this letter is attached as Exhibit F.

7. On February 18, 2004, I sent Dr. Hermescec a letter to his address of record requesting that he sign the documents sent to him in July 2003. Dr. Hermescec has not responded to this letter. A copy of this letter is attached as Exhibit G.

8. On March 25, 2004, I sent Dr Hermescec a letter to his address of record enclosing a copy of the patent specification and a Declaration and Power of Attorney by Express Post. A copy of my letter and enclosures are attached as Exhibit H.

9. As a follow up to my letter of March 25, 2004, I contacted Dr Hermescec by telephone on March 31, 2004. Dr Hermescec confirmed that he had received the letter and enclosures. A copy of my file note memorialising the content of our conversation is attached as Exhibit I.

Date:

April 8, 2004

Signed:

Roberta Stead

Name: Roberta Stead

Title: PATENTS AND ROYALTIES ADMINISTRATOR

MEMORANDUMTHE UNIVERSITY OF
MELBOURNETO CC / 00326

Telephone conversation with Branko Hermesec.

Time 1.43 - 1.49 pm

I said that I wanted to send him some documents relating to a patent application for him to sign.

His response "No dice". He said that they related to the past.

I did convince him to look at the papers and to then contact me with his response.

He gave me his current address in Melbourne.

He spends half his time here and the remainder in Sydney where he has the family home.

Contact details: CSIRO Forestry Products Division
- Clayton. tel. 9545 2270

Home: 22A Cornelius St
Dandenong VIC 3175

Documents to be sent by registered mail.

FROM

ROBERTA STEND

DATE

6-7-03

A Post.

Registered post.

Tax invoice.

08/08/03

01/42629 1sp/1

337834 11:56

A U S T R A L I A P O S T
Melbourne University P.O. 3052
EFTPOS
471527-386 03/05
Credit Account
EFTPOS Tender 51.05
TOTAL EFTPOS 51.05
TRANSACTION APPROVED
SIGNATURE ACCEPTED
NAB VISA PUR CARD
08/08/03 01/007794 1sp/1 337834 11:56

A U S T R A L I A P O S T
Melbourne University P.O. 3052
0.233 kg to Postcode 3175
Large Letter 1.45 *
Registered Post 2.35 *
Delivery Confirmation 1.65 *
GENERIC EXPP ENV B4 x 10 48.00 *
BULK DISCOUNT 2.40 *
TOTAL \$51.05
Payment Tendered Details :
EFTPOS 51.05
* POST supplied, price includes GST.
GST on POST taxable Supply : 4.64

ABN:28 864 970 579 TAX INVOICE

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08/08/03 01/42629 1sp/1 337834 11:56

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ASK WHICH BILLS YOU CAN PAY HERE.

REGISTERED POST AND INSURANCE



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and additional or supplementary services:

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- Delivery confirmation
- Person-to-person

From - Sender

Name

Ms. Anna Smith Legal Services

Address

Level 4, 123 Main St, Sydney

Postcode 2000

Telephone Number

(02) 1234 5678

Fax Number

()

To - Addressee

Name

Mr. John Doe

Address

123 Main St, Sydney

Postcode 2000

Telephone Number

()

Fax Number

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Additional Insurance additional fees apply

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	\$	\$
	\$	\$
	\$	\$
	\$	\$

Total of insurance cover required \$

Supplementary Services additional fees apply

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I require Delivery Confirmation ☐ Yes ☐ No

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I require Person-to-person delivery ☐ Yes ☐ No

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Are you charging these costs to your Australia Post Charge Account?

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Yes ☐

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Are you registered for the GST?

☐ Yes

☐ No

If YES, are you entitled to claim any input tax credits on the above services?

☐ Yes

☐ No

Declaration

I hereby declare that:

- 1 I am the customer and/or authorised agent of the customer;
- 2 I have read and agree to the Registered Post and Insurance Services Terms and Conditions;
- 3 All information contained on this document is to the best of my knowledge true and correct;
- 4 This article does not contain dangerous or prohibited goods such as explosives, flammables, corrosives, aerosols and so on. (If in doubt ask at any Post Office)

Signature (customer or agent)

Date

18/08/2003

Name (Block capitals please)

JOHN DOE

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Registered Post

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Insurance

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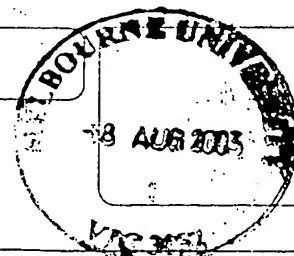
Total Payable

\$ 1.00

Signature of Officer

Date

18/08/2003



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	Branko HERMESCEC	
Appl. No.:		
Filed:	29 May, 2003	Examiner:
Title:	Wood products and processes for the preparation thereof	Group Art Unit:

POWER OF ATTORNEY

Commissioner of Patents
Washington, D.C. 20231

I hereby certify that this document is being sent via First Class U.S. mail addressed to: Commissioner of Patents, Washington, D.C. 20231 on this ____ day of ____, 2002.

(Signature)

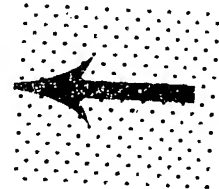
Sir:

In the above-referenced patent application, on behalf of THE UNIVERSITY OF MELBOURNE, I hereby appoint the Dorsey & Whitney LLP attorneys and agents associated with **Customer Number 32940** to prosecute the patent application identified above and to transact all business in the Patent and Trademark Office connected therewith, including full power of association, substitution, and revocation.

Please address all telephone calls to: at (415) 781-1989.

Please address all correspondence to at the address corresponding to Customer Number 32940, currently:

DORSEY & WHITNEY LLP
Four Embarcadero Center,
Suite 3400
San Francisco, California 94111-4187



**SIGN
HERE**

Dated:

Signature: _____
Name: _____
Title: _____

MFG Dean
Intellectual Property Officer
The University of Melbourne

COPY

- 1 -

THIS DEED OF CONFIRMATION AND ASSIGNMENT is made this ^{7th} day of November 2002,

BETWEEN

Branko HERMESCEC, of 1040 Midland Highway, Creswick, Victoria 3363, Australia; **Neli DRVODELIC**, of 8 Toolang Court, Mt Waverley, Victoria 3149, Australia; **Barry SHEARER** of 209 Landsborough Street, Ballarat, Victoria 3350, Australia; **David BUTT** of c/- The University of Melbourne, Grattan Street, Parkville, Victoria 3052, Australia; **Brett SKEWES** of c/- The University of Melbourne, Grattan Street, Parkville, Victoria 3052, Australia; (hereinafter jointly referred to as "the INVENTORS") of the first part

-and-

The University of Melbourne, of Grattan Street, Parkville, Victoria 3052 (hereinafter referred to as "the UNIVERSITY") of the second part

WHEREAS:

A. THE INVENTORS have during the course of their employment or commission by the UNIVERSITY made an invention relating to "Wood Products and Processes for the Preparation Thereof" (hereinafter referred to as "the Invention").

B. THE INVENTORS as employees or by commission of the UNIVERSITY at the time the Invention was made acknowledge that the Invention belongs to the UNIVERSITY.

C. THE UNIVERSITY by virtue of its ownership of the Invention lodged a provisional patent application for Letters Patent of Australia under number PR1831 on 1 December, 2000 for the Invention (hereinafter referred to as "the Australian Application").

D. THE UNIVERSITY has requested the INVENTORS and the INVENTORS have agreed to make the Assignment hereinafter contained.

NOW THIS DEED CONFIRMETH AND WITNESSETH as follows:-

1. IN pursuance of the said request and in consideration of the premises the INVENTORS hereby jointly assign convey and confirm unto the UNIVERSITY:-

- (a) ALL THAT their respective rights titles and interests of in and to the Invention for the Commonwealth of Australia and for all territories outside the Commonwealth of Australia (hereinafter referred to as "Foreign Territories")
- (b) ALL THAT the Australian Application together with the full and exclusive benefit and advantage thereof and of any Letters Patent of the Commonwealth of Australia which may be granted pursuant thereto
- (c) ALL THAT the right to file an application or applications for Letters Patent or similar provision of Foreign Territories (hereinafter referred to as "Foreign Applications") in respect of the Invention either in the name of the UNIVERSITY or in such other name or names as the UNIVERSITY may direct
- (d) ALL THAT the right to file an International Application under the Patent Cooperation Treaty designating the Commonwealth of Australia and/or Foreign Territories for Letters Patent or similar provision (hereinafter referred to as "International Application") in respect of the Invention either in the name of the UNIVERSITY or in such other name or names as the UNIVERSITY may direct
- and -
- (e) ALL THAT the right to claim for any Foreign Applications and/or International Application in respect of the Invention the priority dates of the Australian Application under the provisions of the International Convention.

TO HOLD the same together with all rights in any such Application or Letters Patent or similar provision granted pursuant thereto unto the UNIVERSITY absolutely.

2. THE UNIVERSITY shall make any claim necessary to record itself as owner of any such rights and the INVENTORS and each of them shall at the expense and request of the UNIVERSITY execute and do all acts documents and things necessary to establish such claim and to vest in the UNIVERSITY absolutely the Inventions and any developments and improvements thereto made at the date hereof and the Australian Applications and any Letters Patent granted pursuant thereto.

3. THE INVENTORS and each of them shall at the request and expense of the UNIVERSITY execute and do all such acts documents and things as the UNIVERSITY may reasonably require:-

- (a) to enable any Foreign Application or International Application to be filed in respect of the Invention in the name of the UNIVERSITY or otherwise as the UNIVERSITY may direct
- (b) to assist in the prosecution of the Australian Application and in any Foreign Application and/or International Application filed in respect of the Invention
- (c) to vest in the UNIVERSITY or as it may direct any Letters Patent or similar provision which may be obtained pursuant to the Australian Application, any Foreign Application or any International Application as aforesaid.

4. IN this Deed the expression "the INVENTORS" includes their respective legal personal representatives and the expression "the UNIVERSITY" includes its successors and assigns.

IN WITNESS whereof the INVENTORS have hereunto set their respective hands and seals
and the UNIVERSITY has caused its Common Seal to be hereunto affixed the day and year
first above written.

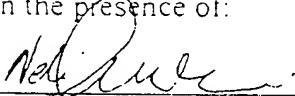
SIGNED SEALED and DELIVERED by)
the abovenamed **Branko HERMESCEC**)
in the presence of:)

Branko Hermescec

Witness:

Name:

SIGNED SEALED and DELIVERED by)
the abovenamed **Neli DRVODELIC**)
in the presence of:)




Neli DRVODELIC

Witness:

Name: **NELI DRVODELIC**

SIGNED SEALED and DELIVERED by)
the abovenamed **Barry SHEARER**)
in the presence of:)

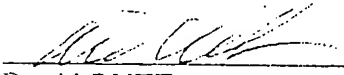


Barry SHEARER

Witness:

Name: **Barry Shearer**

SIGNED SEALED and DELIVERED by)
the abovenamed **David BUTT**)
in the presence of:)

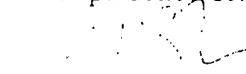


David BUTT

Witness:

Name: *Roslyn Shave*

SIGNED SEALED and DELIVERED by)
the abovenamed **Brett SKEWES**)
in the presence of:)



Brett SKEWES

Witness:

Name: *Antia Skewes*

~~THE COMMON SEAL of THE)
UNIVERSITY OF MELBOURNE)
hereunto affixed in the)
presence of:)~~

GIVEN under the COMMON SEAL of)
THE UNIVERSITY OF MELBOURNE by)
Direction of an officer authorised for the)
Purpose under Statute 1.5.4. of the University)
Of Melbourne Statutes)



Name

~~UNIVERSITY OFFICER~~
Professor Kwong Lee Dow
Deputy Vice Chancellor

Position



Name

LENNARD CURRIE

UNIVERSITY SECRETARY

Position

ASSIGNMENT OF INVENTION/APPLICATION

(I) We), the undersigned, **Branko HERMESCEC**, an Australian citizen of 1040 Midland Highway, Creswick, Victoria 3363, Australia; **Neli DRVODELIC**, an Australian citizen of 8 Toolang Court, Mt Waverley, Victoria 3149, Australia; **Barry SHEARER**, an Australian citizen of 209 Landsborough Street, Ballarat, Victoria 3350, Australia; **David BUTT**, an Australian citizen of The University of Melbourne, Grattan Street, Parkville, Victoria 3052, Australia; and **Brett SKEWES**, an Australian citizen of The University of Melbourne, Grattan Street, Parkville, Victoria 3052, Australia

hereby assign to THE UNIVERSITY OF MELBOURNE, a company organized under the laws of Australia, of Grattan Street, Parkville, Victoria 3052, Australia (my) (our) entire rights to apply for and obtain a patent in Chile on an invention made by (me) (us) entitled: Wood products and processes for the preparation thereof

Branko HERMESCEC ASSIGNOR

Signed at _____

_____ before me

This _____ day of _____, 20__

 NOTARY PUBLIC

Neli DRVODELIC ASSIGNOR

Signed at _____
_____ before me

This _____ day of _____, 20__

NOTARY PUBLIC

Barry SHEARER ASSIGNOR

Signed at _____
_____ before me

This _____ day of _____, 20__

NOTARY PUBLIC

David BUTT ASSIGNOR

Signed at _____
_____ before me

This _____ day of _____, 20__

NOTARY PUBLIC

Brett SKEWES ASSIGNOR

Signed at _____
_____ before me

This _____ day of _____, 20__

NOTARY PUBLIC

THE UNIVERSITY OF MELBOURNE

ASSIGNEE

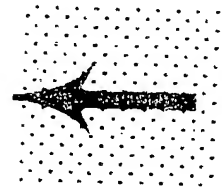
Name _____ Title _____

Signed at _____

_____ before me

This _____ day of _____, 20__

NOTARY PUBLIC



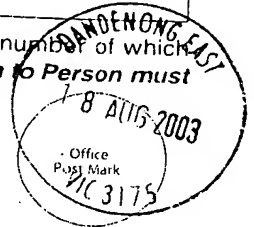
**SIGN
HERE**




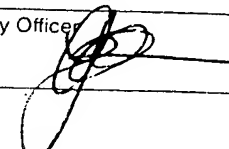
Delivery Confirmation - Advice Receipt

Registered Post No.	Sender's Reference
---------------------	--------------------

Receipt is acknowledged of the Registered Post item, the number of which appears above. **Note: Registered Post articles sent Person to Person must be signed by the addressee only.**




Signature of Addressee or Agent

Signature of Delivery Officer 	Date delivered 18/ 8/ 03
--	-----------------------------

File Note

19 August 2003

CR 00/00326

10.10am – telephone conversation for about 20 minutes

Dr Branko Hermesec rang me regarding the papers I had sent him for signing. He said that he would like to meet me to show me some papers. I stressed that I had no expertise to consider any documents that he had, that I was not a solicitor nor a patent attorney and that I had not been party to any discussions regarding the portfolio between the University and Lignotek and Carter Holt Harvey.

I did say that I was aware he had left the University suddenly about 1 and a half years ago and that he had had a dispute with the University.

He went on to tell me that he had strong objections to the ownership of IP by Carter Holt Harvey, which initially had been 50% and was increased when the University removed its funding. He said that he would not sign anything whilst the IP belonged to Carter Holt Harvey and that he would seek an injunction if necessary.

He also told me that the portfolio "Wood products and processes for the preparation thereof" was owned by Lignotek. I said that this was not shown on the University database.

I said that I had heard that some negotiations had been taking place recently. I said that I would try to find out anything favourable to his position which might persuade him to change his mind about signing.

He also asked me if I had a record of him being the inventor of any portfolios involving boron. I searched the database and also the IP Australia website and told him that there was nothing. He seemed to think that his contribution in that area had been taken over by someone else.

On his insistence and as a courtesy, I agreed to meet him for lunch on Wednesday 27 August 2003.

Roberta Stead

FILE NOTE

27 August 2003

CR97/00592

CR00/00326

Meeting with Dr Branko Hermescec

I met with Branko Hermescec today at his request.

He confirmed that he would not sign the documents I had sent him. He holds no grudge against the University but is unhappy with any association between Carter Holt Harvey and Lignotek and the University.

He gave me a copy of a letter he had sent Professor Frank Larkins (DVC Research) last year explaining his position. He said that a number of jobs had been lost in the dismantlement of Lignotek including that of his student Neli Dvrodolic. He said that he had initially supported the creation of Lignotek but that it had been inadequately funded from the start.

He will seek means to stop the process of applying for the patents in the US in particular, which would include contacting the US patent office and seeking an injunction.

He confirmed that he had initiated a third patent application before he had left the University and that he had discussions with Andrew Dark at DCC. This research involved the use of boric acid. I repeated that I had found no record of such an application having been lodged. I said that I had asked Andrew Dark who could not recall any either. Branko suspects that it has been taken over by others in Forestry without his being acknowledged. He said he had copies of documents sent to the patent attorney. I urged him to get in contact with Andrew Dark to clarify this matter.

I suggested to Branko that he send a letter to Legal Services explaining his position with regard to signing the documents. Although I thought it appropriate to write to Michael Dean, he insisted that he would address the letter to me. I said that I would endeavour to obtain a reply which explained the University's current position on the Lignotek matter.

Roberta Stead

Roberta Stead
Intellectual Property Officer
The University of Melbourne

28th August 2003

Branko Hermescec
22A Cornelius St.
Dandenong 3175

Dear Roberta

Re: Patent Application PCT/AU01/01558

Thank you for your letter of 7th August requesting my signatures on various patent application documents. This patent, together with other related issues was at the very core of precipitating the end of my association with the University. For your information and better understanding of circumstances I enclose the copy of my letter to the Deputy Vice Chancellor for Research Professor Frank Larkins, dated 17th May 2002.

You may deduce that the concerns rose in the letter about Lignotek's way of doing things and the prediction of events to follow proved to be ominously accurate. To my understanding Lignotek declared insolvency but claimed the ownership of the IP. Am I correct?

I never signed the Deed of Assignment, despite Dr G. Swafford's threats, quoted in the letter to Professor Larkins, and I still dispute the University and Lignotek's claims about exclusive ownership of the IP, underpinning the above patent.

However, I have not yet taken any action, and would welcome yours or the University's clarification as per the following points, before deciding on the course of action.

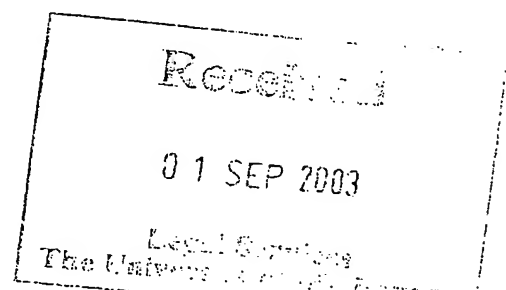
1. Current status of Lignotek; re: solvency and ability to conduct business
2. Current shareholding of Lignotek; The University, Carter Holt Harvey etc.
3. Status of the claimed ownership of the IP contained in the above patent
4. Status of other potential IP based on my work and my ideas.

My course of action will then depend on the information provided by the University and subsequent legal advice. I am aware and I believe you are also, that patent registration in USA and Canada could not proceed without the first inventor's power of attorney and Deed of the Assignment, which the University does not have. Also, a court injunction and patent deregistration in Australia is an option.

I hope this helps to clarify my views on the matter.

Sincerely

Branko Hermescec



18 February 2004

URGENT

URGENT

AXID



THE UNIVERSITY OF
MELBOURNE

Dr Branko Hermescec
22A Cornelius St.
Dandenong
VIC 3175

Uni of Melb

Dear Branko

National phase entry of International patent application PCT/AU01/01558
"Wood products and processes for the preparation thereof"

The patent attorney has reminded that the documents sent to you in July 2003 are now required to filed.

They were:

Canada and United States	Deed of Confirmation and Assignment
Chile	Assignment
South Africa	Assignment
United States	Declaration and Power of Attorney

Please note that the assignment for Chile must be notarised as outlined in my original letter to you.

As I work part-time you might find it easier to communicate your intentions regarding these forms by email. My email is rstead@unimelb.edu.au

Yours sincerely,

Roberta Stead
For
MFG Dean
Intellectual Property Officer

25 March 2004



THE UNIVERSITY OF
MELBOURNE

Dr Branko Hermescec
22A Cornelius St.
Dandenong
VIC 3175

Dear Branko

US patent application PCT/AU01/01558
"Wood products and processes for the preparation thereof"

Please find enclosed the following documents relating to the filing of the above mentioned patent application in the United States:

Declaration
Patent specification

Please sign the Declaration where indicated and return to the address below. If you have any queries about this procedure please contact Paul Lamb on tel (03) 8344 2030.

Yours sincerely,

Roberta Stead
Patents and Royalties Administrator
For
MFG Dean
Intellectual Property Officer

Sent via Express post 28 March 2004



SENDER TO KEEP
BV5268618

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor :	HERMESCEC, Branko	Group Art Unit : Examiner :
Appln. No. :	10/433067	
Filed :	30 November 2001	
Title :	Modified wood product and process for the preparation thereof	

**DECLARATION AND POWER OF ATTORNEY
FOR UTILITY PATENT APPLICATION
(37 C.F.R. § 1.63)**

As a below named inventor, I hereby declare that my mailing address and citizenship are as stated below.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter that is claimed and for which a patent is sought on the invention entitled:

HERMESCEC, Branko, an Australian citizen of 1040 Midland Highway, Creswick, Victoria 3363, Australia
 DRVODELIC Neli, an Australian citizen of 8 Toolang Court, Mt Waverley, Victoria 3149, Australia
 SHEARER, Barry, an Australian citizen of 209 Landsborough Street, Ballarat, Victoria 3350, Australia
 BUTT, David, an Australian citizen of The University of Melbourne, Grattan Street, Parkville, Victoria 3052, Australia
 SKEWES, Brett, an Australian citizen of The University of Melbourne, Grattan Street, Parkville, Victoria 3052, Australia

the specification of which:

☒ is attached hereto OR

☐ was filed on _____ as United States Application Number _____ or PCT International Application Number _____ and amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information known to me that is material to patentability as defined in 37 C.F.R. 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

PRIOR FOREIGN APPLICATION(S)

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				Yes	No
PR 1831/00	Australia	December 1, 2000	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PRIOR PROVISIONAL APPLICATION(S)

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)

POWER OF ATTORNEY

I hereby appoint the Dorsey & Whitney LLP attorneys and agents associated with **Customer Number 32940** to prosecute the patent application identified above and to transact all business in the Patent and Trademark Office connected therewith, including full power of association, substitution, and revocation.

PLEASE DIRECT ALL CORRESPONDENCE TO:

The address associated with **Customer Number: 32940**, currently:

Name	
Address	DORSEY & WHITNEY LLP Four Embarcadero Center Suite 3400 San Francisco, California 94111-4187
Telephone	(415)
Fax	(415) 398-3249

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Sole or First Inventor:			
Given Name (First and middle)		Family Name or Surname	
Branko		HERMESCEC	
Inventor's Signature			Date:
Residence	Creswick Victoria 3363	Citizenship: Australian	
	City State Zip		
Post Office Address	1040 Midland Highway, Creswick Victoria 3363, Australia		

Second Inventor:			
Given Name (First and middle)		Family Name or Surname	
Inventor's Signature			Date:
Residence			Citizenship:
	City State Zip		
Post Office Address			

Third Inventor:		
Given Name (First and middle)		Family Name or Surname
Inventor's Signature		Date:
Residence	City Zip State	Citizenship:
Post Office Address		

Fourth Inventor:		
Given Name (First and middle)		Family Name or Surname
Inventor's Signature		Date:
Residence	City State Zip	Citizenship:
Post Office Address		

Fifth Inventor:		
Given Name (First and middle)		Family Name or Surname
Inventor's Signature		Date:
Residence	City State Zip	Citizenship:
Post Office Address		

Sixth Inventor:		
Given Name (First and middle)		Family Name or Surname
Inventor's Signature		Date:
Residence	City State Zip	Citizenship:
Post Office Address		

Seventh Inventor:		
Given Name (First and middle)		Family Name or Surname
Inventor's Signature		Date:
Residence	City State Zip	Citizenship:
Post Office Address		

Eighth Inventor:		
Given Name (First and middle)		Family Name or Surname
Inventor's Signature		Date:
Residence	City State Zip	Citizenship:
Post Office Address		

Ninth Inventor:		
Given Name (First and middle)		Family Name or Surname
Inventor's Signature		Date:
Residence	City State Zip	Citizenship:
Post Office Address		

Tenth Inventor:		
Given Name (First and middle)		Family Name or Surname
Inventor's Signature		Date:
Residence	City State Zip	Citizenship:
Post Office Address		

- 1 -

WOOD PRODUCTS AND PROCESSES FOR THE PREPARATION THEREOF

The present invention relates to wood products and processes for the preparation thereof. In particular, the invention relates to processes for treating wood with a solution of
5 furfuryl alcohol, and to processes for the preparation of a composite wood product using a solution of furfuryl alcohol.

The treatment of wood to improve performance characteristics, such as structural and engineering characteristics, of the wood is known. In particular, the densification of wood
10 is not a new idea. Different trials have been done in the past to produce two main products. One is a dimensionally stable untreated compressed wood, commonly called "Staypak", and the other are resin treated compressed board called "Compreg". These products have found a specialist use, and have been marketed in these areas.

15 "Staypak" is hardwood compressed in a fashion that allows the lignin to flow sufficiently between the cellulose fibers to eliminate internal stresses. This is most probably done through heating the wood to a predetermined temperature, compressing and holding for a set amount of time. It is possible to create stable dimensions in this fashion. "Staypak" has increased water resistance, impact resistance, and flexural strength properties, but has
20 little positive effect on weathering.

"Compreg" is layers of hardwood veneer treated with phenol-formaldehyde resin and compressed to around 1350 kg/m^3 . The resin cures in this environment and forms as a holding and bulking agent within the wood to stabilise the wood. This form of treatment
25 has a negative effect on impact strength, but increases water resistance, hardness, and flexural strength. Many novel end uses were found for "Compreg", but it has little or no use today.

Separate work has also been done in the Soviet Union on wood densification. A stable,
30 high-density product was produced, but dimensional stability was not achieved. No product was found that successfully bound the wood in a fixed structure at high density, or

- 2 -

prevent water uptake. A potential limitation to these products is the use of hardwoods. Generally hardwoods are a more expensive raw product, while Radiata pine is a very cheap wood in comparison. Radiata pine sapwood is also very permeable, and the low density allows for large uptakes of solution within the wood. The problem with not
5 chemically modifying the wood is that there is little that can be done to improve a wide range of characteristics, especially dimensional stability.

The production of composite materials using binders, such as formaldehyde are also known. Normally, in such conventional processes, the wood must be dried to a moisture
10 content of from about 2-3% (based on the dry weight of the wood), due to the presence of water in the binder. Furthermore, binders such as formaldehyde are known carcinogens and, therefore, have associated health and safety concerns.

The processes of the present invention advantageously provide for the manufacture of
15 treated wood products and composite wood products which avoid the use of formaldehyde, and which further advantageously provide wood products and composite materials with improved performance characteristics compared with the wood products and composite materials of the prior art.

20 According to a first aspect of the present invention there is provided a process for treating wood comprising:

- a) impregnating the wood with a solution of furfuryl alcohol;
- b) allowing the impregnated wood to sit so as to permit diffusion of the furfuryl alcohol solution into the wood; and
- 25 c) hot pressing the wood under conditions to effect polymerisation of the furfuryl alcohol within the wood.

It is believed that the above process, wherein the furfuryl alcohol solution is allowed to diffuse into the wood facilitates diffusion into the cell walls of the wood, thus blocking
30 hydroxyl groups of the cellulose. As such, on hot pressing of the impregnated wood, a chemical adhesive bond is formed in a three-dimensional array in the wood, thus

- 3 -

providing the treated wood with improved performance characteristics.

The furfuryl alcohol solution preferably includes an additive to facilitate the polymerisation reaction during hot pressing. In a particularly preferred embodiment, the furfuryl alcohol solution includes furfuryl alcohol and maleic acid. So that the maleic acid
5 may be dissolved in the furfuryl alcohol, the solution preferably further comprises water, most preferably in an amount of about 5% by volume.

The impregnation step a) is conducted so to facilitate chemical loading of the wood, preferably at a loading of from about 15% to 30% (based on the dry weight of the wood).
10 In a preferred embodiment, the impregnating step a) comprises applying an initial vacuum to the wood followed by the application of pressure in the presence of the furfuryl alcohol solution. Preferably, the vacuum is applied at a pressure of from -90 to -95 kPa. Preferably, the pressure applied to the wood to facilitate impregnation of the furfuryl
15 alcohol solution is from about 200 to about 1,000 kPa, more preferably at least 300 kPa.

The diffusion step b) is preferably conducted over a period of from about 3 to 5 days at ambient pressure and temperature. The diffusion step b) is preferably such that the wood swells up to about 22% per volume relative to the volume of the original wood sample. It
20 will be understood by those in the art that the amount of swelling of the wood will be somewhat dependent on the density of the wood and that denser wood may be expected to swell more than less dense wood.

The hot pressing step c) is conducted under conditions which will effect polymerisation of the furfuryl alcohol, advantageously resulting in a three-dimensional chemical adhesive
25 bond between the wood fibers. Preferably, the hot pressing step c) is conducted at a pressure of from about 5-30 MPa and a temperature of from about 170-200°C. Preferably, the hot pressing step is conducted for a period of from about 5-15 minutes. Such conditions result in the compression of the microstructure of the wood and trigger the
30 polymerisation reaction of the furfuryl alcohol.

- 4 -

The process of this aspect of the invention may be carried out on any permeable timber including sap wood or soft wood, such as radiata pine. Furthermore, the process may be applied to less permeable woods to which has been applied a pretreatment to increase the permeability of the wood. Such pretreatments may include, for example, microwave or
5 steam treatments.

There is also provided wood when treated by the process according to this aspect of the invention.

10 According to another aspect of the invention there is provided a wood product including wood which has been impregnated with a furfuryl alcohol solution, the wood product having enhanced strength and elasticity characteristics relative to the untreated wood.

In a particular embodiment, the wood product has a crushing strength of at least 50 MPa, a
15 modulus of elasticity of at least 35 GPa and a hardness of at least 25,000 N. More preferably, the wood product has a modulus of elasticity of from 35-40 GPa and a hardness of from 25,000 to 30,000 N.

The wood product described above, or wood when treated by the process of the first
20 aspect of the invention advantageously can be sanded or cut into desirable dimensions or shapes. Furthermore, advantageously the wood product does not absorb significant amounts of moisture, generally below 6% (based on the weight of the wood product). In this regard, the absorbence of moisture is generally not into the wood cell and, as such, the wood product does not exhibit any substantial amount of swelling or shrinkage during a
25 soaking and drying cycle.

The high modulus of elasticity represents a substantial increase compared with that of the untreated wood. In particular, typically the parent wood would have a modulus of elasticity of between 5-6 GPa, compared with that of the treated wood of 35-40 GPa.
30 Similarly, the hardness of the wood product of the invention is significantly higher than that of the parent wood, and is typically much higher than that of any hardwood which is

- 5 -

currently available. For example, jarrah has a hardness of around 7000 N, which is much less than that which may be provided according to this aspect of the invention.

Still further, the wood product of the invention demonstrates high fire resistance, typically
5 in the range of 85-90% of the values which may be expected for fully loaded boron wood. It is also noted that, in general terms, boron can not be successfully fixed to wood, and is thus typically lost from treated wood. In engineering terms, the wood product is structurally sound. Similarly, in economic terms, the production of the wood product, for
10 example using the process for treating wood described above, is cost effective in that soft wood material may be treated to provide a replacement for the more expensive hardwood materials.

In conducting the present invention, it has also been found that furfuryl alcohol may provide significant advantages when used in the production of various wood based
15 composite materials.

Accordingly, in a second aspect the present invention provides a process for preparing a wood based composite material comprising:

- 20 a) blending wood particles with a solution of furfuryl alcohol and furfuryl aldehyde; and
- b) hot pressing the blended wood under conditions to effect polymerisation of the furfuryl alcohol to facilitate adhesion of the wood particles.

As used herein, the term "wood particles" includes wood chips, fibers, particles and the
25 like.

Preferably, the solution of furfuryl alcohol and furfuryl aldehyde comprises an additive, most preferably maleic acid, and water. In one embodiment where maleic acid is the additive, water is added in an amount of 5% by volume, based on the volume of the
30 solution, to facilitate dissolution of the maleic acid in the solution.

- 6 -

In accordance with this aspect of the invention, it is preferable that the blending of the wood particles with the solution of furfuryl alcohol and furfuryl aldehyde be conducted so that there is no significant penetration of the solution into the wood. That is, there is no substantial impregnation of the wood particles with the solution. Rather, the blending is preferably such that the solution is blended onto to the surfaces of the wood particles. For example, blending may be conducted using spinning discs.

To facilitate the blending and ensure that the wood particles are substantially coated with the furfuryl alcohol and furfuryl aldehyde solution, the viscosity of the solution may be adjusted prior to blending. Preferably, the viscosity of the solution is from 150 to 200 centipoise. If required, the solution may be prereacted in a vat to provide the desired viscosity. For example, the solution may be prereacted at temperatures of from about 50-60°C, typically for periods of about half an hour.

The hot pressing step b) according to this aspect of the invention will generally involve lower pressures than those used in the preparation of the wood product described earlier. This is due to the fact that a composite is being produced rather than a solid wood product. As such, in a preferred embodiment, the hot pressing step b) comprises the application of a pressure of from about 6-8 MPa.

The composite board produced by the above process advantageously has a density of at least about 700 kg/m³. Furthermore, as the furfuryl alcohol/furfuryl aldehyde solution contains little water, the water content of the initial wood particles may be relatively high compared with that used in conventional processes for the preparation of composite materials. For example, conventional processes generally require predrying of the wood to a water content of from about 2-3% by weight (based on the dry weight of the wood) due to the presence of water in the binder being used. According to the inventive process for preparing the composite material described herein, the wood particles may have a water content of, for example, up to about 10% by weight (based on the dry weight of the wood). Still further, as a result, the process according to the invention is faced with less problems resulting from gas emissions during processing compared with the conventional

- 7 -

processes for preparing particle board and MDF board.

Accordingly, there is also provided a composite material when prepared by the process as described here above.

5

According to another aspect of the invention there is provided a composite material comprising wood particles which are chemically adhered with a binder solution of furfuryl alcohol and furfuryl aldehyde, preferably a binder solution which comprises furfuryl alcohol, furfuryl aldehyde, an additive such as maleic acid and water.

10

The following examples are provided for exemplification only and should not be construed as limiting on the invention in any way.

Samples of approximate size 18 x 45 x 200 of Radiata pine sapwood were used in this example. Samples were treated in a designed treatment tray to minimize the amount of treatment solution required. A modified Bethell process was used to produce required uptakes using the following treatments:

15

1. A Boron Mixture used under the following treatment schedule for large uptake:

20

Initial Vacuum – 85 kPa for 15 minutes.

Pressure of 1200 kPa for 45 minutes.

Release pressure, and remove wood samples from treatment solution.

Put samples into empty tray, and back into treatment plant.

Final vacuum of –50 kPa for 20 minutes.

25

2. Furfuryl alcohol composed of:

90% Furfuryl Alcohol

5% Maleic Acid (Catalyst)

5% Water (Assist Catalyst)

- 8 -

used under the following treatment schedule:

Vacuum of -70 kPa for 10 minutes.

Soak for 30 minutes.

Stand for 3-4 days to allow diffusion to occur.

- 5 3. Control samples , some to be compressed, and some left in its original form.

The press and two moulds were preheated to 175°C before a sample was placed in each mould. The mould lids were inserted on top of the samples and pressed for 10 minutes. The press has a maximum of 18000 kPa, and the surface area of the mould lids is 200 cm², therefore the maximum pressure is 90 kPa/cm².

- 10 The samples were then removed from the moulds, cooled and sanded to produce the end product. A problem was discovered when pressing the wood blocks. The wood increased in width freely as pressure was increased. As a result the end product was undesirable.

- The end product was uncontrollable and for testing, uniform size samples were required. As a result a containing device was developed (Fig 1). The wood is placed in the mould,
15 the lid placed on top of the wood, and then pressed. As the wood compresses, the top of the lid becomes the same height as the sides of the mould. Once this point is reached, no more compression can occur, and the wood sample is of a predetermined size, shape and density, and can be readily reproduced. Made from flat, mild steel, the mould contains the wood producing a constant end product. The dimensions can be changed by inserting
20 extra flat steel into the mould, and by changing the thickness of the "lid".

An increase in density was achieved in this trial. Table 1 displays the final density of each sample and the average density of each treatment type.

- 9 -

Sample No.	Uncompressed Controls	Compressed Controls	Boron Treated Compressed	Furfuryl Alcohol Compressed
1	454	1296	1121	1415
2	523	1181	983	1359
3	513	1171	1155	1336
Mean	497	1216	1086	1370

Table 1. Final densities of each sample.

Table 2 displays the densities of the samples through each stage of the process, and shows the increase in density from the initial stage, to the final product.

5

Sample No.	Initial Density	Post Treatment Density When Dry	Final Density	Density Increase From Initial
C1	514		1296	2.5
C2	485		1181	2.4
C3	470		1170	2.5
B1	483	561	1121	2.3
B2	482	527	983	2.0
B3	470	575	1155	2.5
F1	480	691	1415	2.9
F2	451	632	1357	3.0
F3	485	695	1336	2.7

Table 2. Density changes throughout treatment process.

- 10 -

C = Compressed Control, B = Boron Samples, F = Furfuryl Alcohol Samples.

Observation of these results shows that the Furfuryl alcohol samples had definite greater density increase than the compressed controls and Boron samples.

- 5 Three replicates of each sample type were produced and tested for MOE on a laboratory strength-testing machine. The formula for MOE is:

$$\frac{WI^3}{4bd^3}$$

10 $4bd^3$

Where: W = Load (N)
I = Span (length of sample)
Δ = Deflection
15 b = Width of sample
d = Thickness of sample

Now: Slope = W/Δ

Therefore:

20

$$\frac{\text{Slope} \times I^3}{4bd^3}$$

$$4bd^3$$

- 25 The dimensions were taken, and data gained from the strength-testing machine. The results were then calculated using the above formula.

Treatment Type	Approximate Dimensions
Uncompressed Control	200 x 45 x 16mm
Compressed Control	200 x 45 x 6mm

- 11 -

Compressed Boron Treatment	200 x 50 x 6mm
Compressed with Furfuryl Alcohol	200 x 50 x 6mm

The individual results of each sample are displayed in Table 3.

Sample No.	Uncompressed Control (MPa)	Compressed Control (MPa)	Boron Treatment (MPa)	Furfuryl Alcohol (MPa)
1	7689	28092	27138	36468
2	8663	25708	20768	29818
3	8371	22980	33449	30507
Mean	8241	25593	27118	32264

5 Table 3. MOE values for each sample.

Analysis of the results clearly shows a dramatic rise of MOE in the compressed samples. The mean results of the compressed samples have a MOE three to four times higher than the uncompressed control. Of the compressed samples there is also some difference in results. The treated samples have a higher MOE than the untreated samples, and the Furfuryl alcohol samples clearly gave the highest results.

Koehler (1924) generalized that the MOE increases directly with density increase. Table 4 shows the mean increases of density of MOE, and then the proportionate MOE increase with density.

	Mean Density Increase	Mean MOE increase	MOE/Density
Control	2.4	3.1	1.30
Boron	2.2	3.3	1.50

- 12 -

Furfuryl	2.7	3.9	1.45
Alcohol			

Table 4. Mean increase of MOE/Density.

- 5 Observation of these results indicates that all the sample types have exceeded the generalization Koehler makes. The treated samples show a greater increase in MOE than the untreated samples.

Three replicates of each sample type were produced and tested for MOR on a laboratory
 10 strength-testing machine. The formula for MOR is:

$$\frac{3WI}{2bd^2}$$

$$2bd^2$$

15

Where: W = Load (N)
 I = Span (length of sample)
 b = Width of sample
 d = Thickness of sample

20

The dimensions were taken, and data gained from the strength-testing machine. The results were then calculated using the above formula.

The MOR data for the samples is displayed in Table 5, and all data in Appendix 3.

25

Sample No.	Uncompressed Control (GPa)	Compressed Control (GPa)	Boron Treated (GPa)	Furfuryl Alcohol (GPa)
1	71.4	251.5	130.3	219.8
2	104.2	171.1	116.5	144.3

- 13 -

3	114.4	175.0	119.6	202.3
Mean	96.6	119.2	122.2	188.8

Table 5. MOR values for each sample.

Analysis of the results shows an increase of MOR values in the compressed samples. The mean results of the compressed samples have a MOE 1.3 to 2.1 times higher than the uncompressed control. Of the compressed samples there is also some difference in results. The control samples have a higher MOE than the treated samples.

The MOR increases slightly more rapidly than the density. This has not been the case for this series of samples. As seen in Table 6 the density has increased at a higher rate than the MOR in all sample types. The controls were close to 1:1, but the treated samples, especially the Boron treated samples gave negative results in comparison to the controls.

It has been found that the MOR of compressed untreated wood (StayPak), has a marginally higher MOR than uncompressed wood, and the resin treated compressed wood (Compreg), actually has a lower MOR than uncompressed, untreated wood. So in comparison to these results, the MOR of our samples appears quite good.

	Mean Density Increase	Mean MOR Increase	MOR/Density
Control	2.4	2.1	0.95
Boron	2.2	1.3	0.60
Furfuryl Alcohol	2.7	1.9	0.75

Table 6. Mean increase of MOR/Density.

Hardness test were also conducted on samples approximately 17 x 50 x 200 mm in size as uncompressed controls, compressed controls, and Furfuryl alcohol treated samples. Initial

- 14 -

trials on thinner samples failed due to breakage, therefore no meaningful results could be gained. Therefore, it was necessary to produce new thicker samples, but due to material and time constraints, the Boron treated samples.

- 5 The results are displayed in Table 7. The results are difficult to analyze due to incomplete results with the Furfuryl alcohol samples, although it is possible to gain some indications from the results. The compressed samples had a much higher surface hardness than the uncompressed samples as expected. The Furfuryl alcohol samples have a higher hardness than the compressed controls. These are the only clear results to be gained.

10

Sample No.	Density	Hardness			Average Density Increase	Average Hardness Increase
		Test 1	Test 2	Test 3		
U1	454	2252	2608	2520		
U2	523	2728	2792	2988		
C1	1025	7190	7760	8350	2.1	2.9
C2	982	6938	7140	7200	2.0	2.7
F1	1265	10000 @ 3.3	10000 @ 2.9	10000 @ 2.8	2.6	>3.7
F2	1312	10000 @ 3.25	10000 @ 2.8	10000 @ 2.4	2.7	>3.7

Table 7. Results of hardness trial, and density of each sample.

- 15 The density is displayed to show how the density increase, produces an increase in hardness. Koehler (1924), stated that in general the hardness increase is approximately the square of the density. Therefore a density increased by a factor of 2, should produce a hardness increase of approximately 4. Observation of the control samples, show that the hardness increase is not as high as expected, but it is hard to tell with the Furfuryl alcohol

- 15 -

samples. The hardness "ball" needs to penetrate 5.6 mm into the wood surface, but this was not achieved with the strength-testing machine used. The strength-testing machine has a maximum force of 10,000 N, so the depth of penetration was recorded when the maximum force was reached. As can be seen in Table 7 there was still a large amount of
5 penetration to occur before the 5.6 mm mark was reached, therefore the hardness values would actually be much higher.

3 replicates of each type of sample:

- 10 30 x 30 x 6mm for compressed samples
- 30 x 30 x 16mm for uncompressed controls

were produced for dimensional stability testing.

- 15 All samples were dried at 105°C for 24 hours to produce a known starting point. Each sample was weighed and dimensions taken before exposure to water. Each sample type was placed in individual beakers of water. All samples were removed from the water, dried with paper, weighed, and dimensions taken at following time intervals:
- 20 5, 10, 15, 20, 30, 60, 180 minutes, and 24 hours.

When finished the samples were dried at 105°C for 24 hours, weighed, and dimensions taken.

- 25 Displayed in Figure 2 is the data for each individual samples mass change over time. A brief observation of this chart shows that there was steady mass increase over time for all samples except the Furfuryl alcohol samples. Table 8 shows the percentage increase of mass from the starting point to 24 hours of soaking. The standout figure here is the very low percentage mass gain of the Furfuryl alcohol samples. On average there was only a
30 4.8% mass gain. The Boron treated samples had an average 76.4% mass gain over the 24-hour soaking period. The controls, and compressed controls had mass uptakes of 48.7%

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and 35.7% respectively.

Figure 3 displays all the data of the changes in the longitudinal direction. It is expected that in all samples there should be very little change during this trial, and this is what can be seen from observation of the results. Each sample keeps within a 0.3 mm range, and appears quite random with time. Some of this random nature can be explained by the use of the digital calipers, as it is impossible to be totally accurate when using manual means. If there can be any differences found between the samples, it is that the variation is slightly smaller in the Furfuryl alcohol samples.

Observation of Figure 4 shows that the tangential dimension changes have similar results to the mass change section previously discussed. Apart from the Furfuryl alcohol samples there is a clear steady increase over time in the other sample types. Table 8 gives the percentage increase from the start of the trial to the 24-hour mark. The percentage increase in the tangential direction for the controls, compressed controls and Boron treated samples are 2.4%, 1.9% and 2.3% respectively. The Furfuryl alcohol samples had an increase of 0.9% over 24 hours soaking time. This is the notable result to come from this section of the trial.

The last section analyzed is the dimension changes in the radial direction. The compressed samples are compressed in the radial direction, so this is the section where very notable results are expected. The data for each sample is shown in Figure 2. It is expected that the compressed samples should swell at a much greater rate than the uncompressed samples, as there is much more cell wall material in the compressed samples. Observation of Figure 5 shows high swelling in the compressed control and Boron treated samples, but less in the control and Furfuryl alcohol samples. Percentage increase over the 24-hour soaking period is again shown in Table 8. The controls had a dimension increase of 3.4% on average, which is fairly standard. The compressed controls and Boron treated samples had an increase of 33.1% and 47.4% respectively. As already noted this is due to the amount of cell wall material in the high-density product, and they were compressed approximately 130% when pressed. The Furfuryl alcohol

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samples, which had an average density of 1370 kg/m^3 , only had an average swelling of 6.7%. These are very encouraging results.

Sample No.	% Mass Increase	% Tangential Increase	% Radial Increase
U1	56.5	4.3	3.9
U2	46.8	4.2	3.8
U3	42.9	-1.4	2.5
Mean	48.7	2.4	3.4
C1	16.9	1.9	29.8
C2	44.9	1.8	31.2
C3	45.4	1.9	38.4
Mean	35.7	1.9	33.1
B1	79.1	2.5	47.0
B2	74.4	1.6	42.9
B3	75.7	2.9	52.5
Mean	76.4	2.3	47.4
F1	4.7	0.9	7.6
F2	5.3	1.0	6.4
F3	4.5	0.9	6.3
Mean	4.8	0.9	6.7

5 Table 8. % mass increase, % tangential increase, % radial increase for dimensional stability trial.

In all the four aspects of this trial the Furfuryl alcohol samples produced excellent results. The other samples behaved fairly predictably, but it was the Furfuryl alcohol samples
 10 where the main interest was. The Furfuryl alcohol samples allowed minimal water into

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the wood, and also allowed minimal dimension change in very high-density wood.

Throughout this specification and the claims which follow, unless the context requires otherwise, the word "comprise", and variations such as "comprises" and "comprising", will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

The reference to any prior art in this specification is not, and should not be taken as, an acknowledgment or any form of suggestion that that prior art forms part of the common general knowledge in Australia.

10

Those skilled in the art will appreciate that the invention described herein is susceptible to variations and modifications other than those specifically described. It is to be understood that the invention includes all such variations and modifications which fall within its spirit and scope. The invention also includes all the steps, features, compositions and compounds referred to or indicated in this specification, individually or collectively, and any and all combinations of any two or more of said steps or features.

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CLAIMS:

1. A process for treating wood comprising:
 - a) impregnating the wood with a solution of furfuryl alcohol;
 - b) allowing the impregnated wood to sit so as to permit diffusion of the furfuryl alcohol solution into the wood; and
 - c) hot pressing the wood under conditions to effect polymerisation of the furfuryl alcohol within the wood.
2. A process according to claim 1, wherein the furfuryl alcohol solution includes an additive, preferably maleic acid, to facilitate polymerisation during hot pressing.
3. A process according to claim 2, wherein the furfuryl alcohol solution further comprises water, preferably in an amount of about 5% by volume.
4. A process according to claim 1, wherein the impregnating step a) comprises applying an initial vacuum to the wood followed by the application of pressure in the presence of the furfuryl alcohol solution.
5. A process according to claim 4, wherein the vacuum is applied at a pressure of from -90 to -95 kPa and wherein the pressure applied to the wood to facilitate impregnation of the furfuryl alcohol solution is from about 200 to about 1,000 kPa, preferably at least 300 kPa.
6. A process according to claim 1, wherein the diffusion step b) is conducted over a period of from about 3 to 5 days at ambient pressure and temperature.
7. A process according to claim 1, wherein the diffusion step b) is such that the wood swells up to about 22% per volume relative to the volume of the original wood sample.

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8. A process according to claim 1, wherein the hot pressing step c) is conducted under conditions which will effect polymerisation of the furfuryl alcohol resulting in a three-dimensional chemical adhesive bond between the wood fibres.
- 5 9. A process according to claim 1, wherein the hot pressing step c) is conducted at a pressure of from about 5-30 MPa and a temperature of from about 170-200°C, preferably for a period of from about 5-15 minutes.
- 10 10. A process according to claim 1, including pretreating the wood to increase the permeability of the wood, preferably by microwave or steam treatments.
11. Wood when treated by the process according to claim 1.
- 15 12. A wood product including wood which has been impregnated with a furfuryl alcohol solution, the wood product having enhanced strength and elasticity characteristics relative to the untreated wood.
- 20 13. A wood product according to claim 12, having a crushing strength of at least 50 MPa, a modulus of elasticity of at least 35 GPa and a hardness of at least 25,000 N, preferably a modulus of elasticity of from 35-40 GPa and a hardness of from 25,000 to 30,000 N and drying cycle.
- 25 14. A process for preparing a wood based composite material comprising:
d) blending wood particles with a solution of furfuryl alcohol and furfuryl aldehyde; and
e) hot pressing the blended wood under conditions to effect polymerisation of the furfuryl alcohol to facilitate adhesion of the wood particles.
- 30 15. A process according to claim 14, wherein the solution of furfuryl alcohol and furfuryl aldehyde comprises an additive, preferably maleic acid and water.

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16. A process according to claim 15, wherein water is added in an amount of 5% by volume, based on the volume of the solution, to facilitate dissolution of the maleic acid in the solution.
- 5
17. A process according to claim 14, wherein the blending of the wood particles with the solution of furfuryl alcohol and furfuryl aldehyde is conducted so that there is no significant penetration of the solution into the wood, the wood particles being substantially coated with the furfuryl alcohol and furfuryl aldehyde solution.
- 10
18. A process according to claim 14, wherein the viscosity of the solution is from 150 to 200 centipoise.
- 15
19. A method according to claim 14, wherein the hot pressing step b) comprises the application of a pressure of from about 6-8 MPa.
20. A composite material when prepared by the process according to claim 14.
- 20
21. A composite material comprising wood particles which are chemically adhered with a binder solution of furfuryl alcohol and furfuryl aldehyde, preferably a binder solution which comprises furfuryl alcohol, furfuryl aldehyde, an additive such as maleic acid and water.

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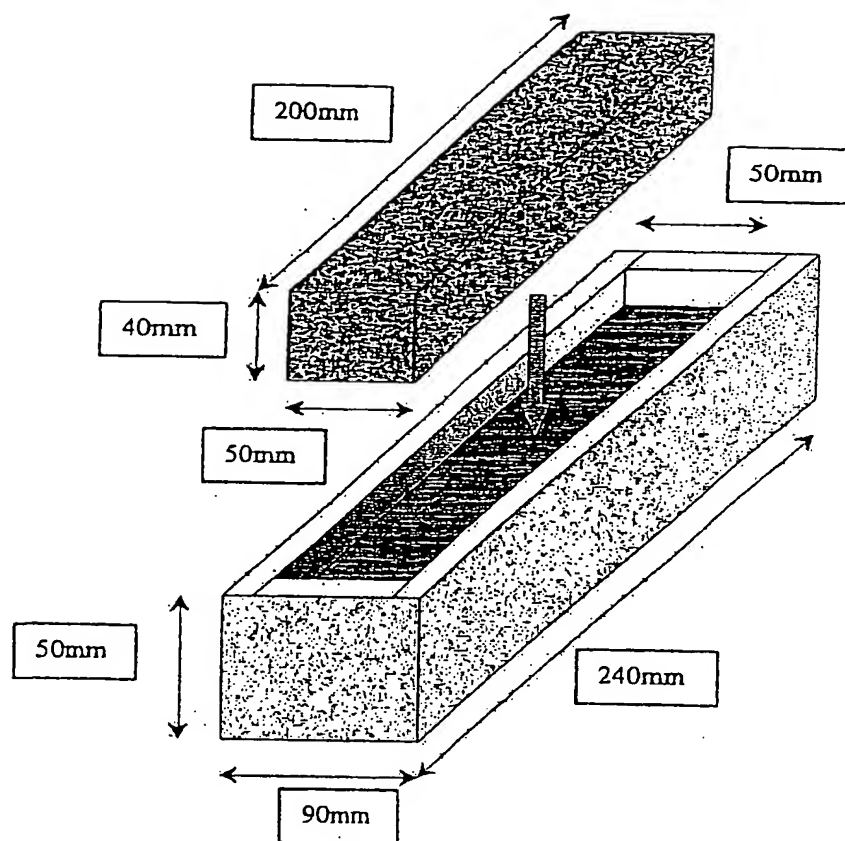


Fig.1. Dimensions of mould produced for producing constant sized samples.

FIG. 1

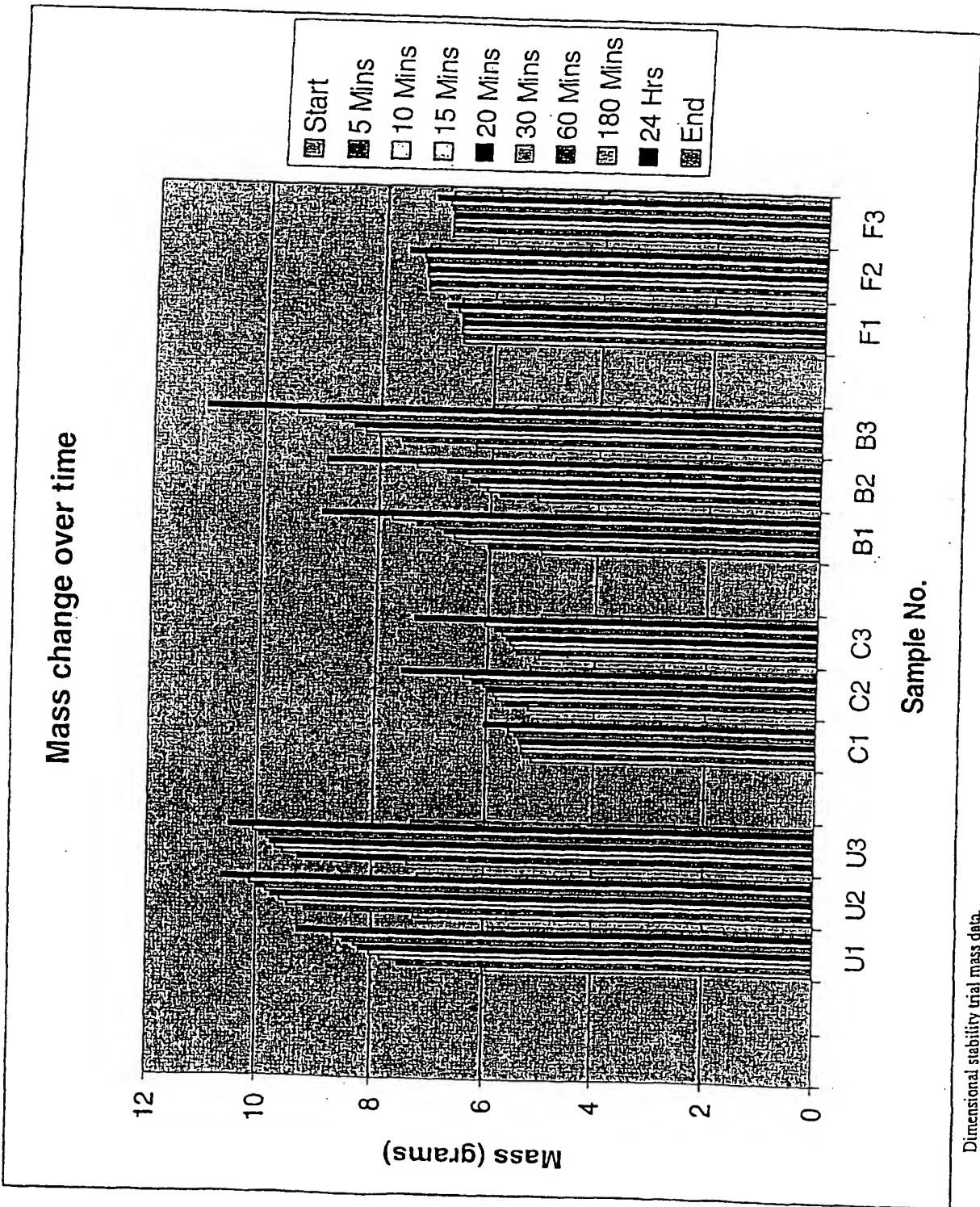
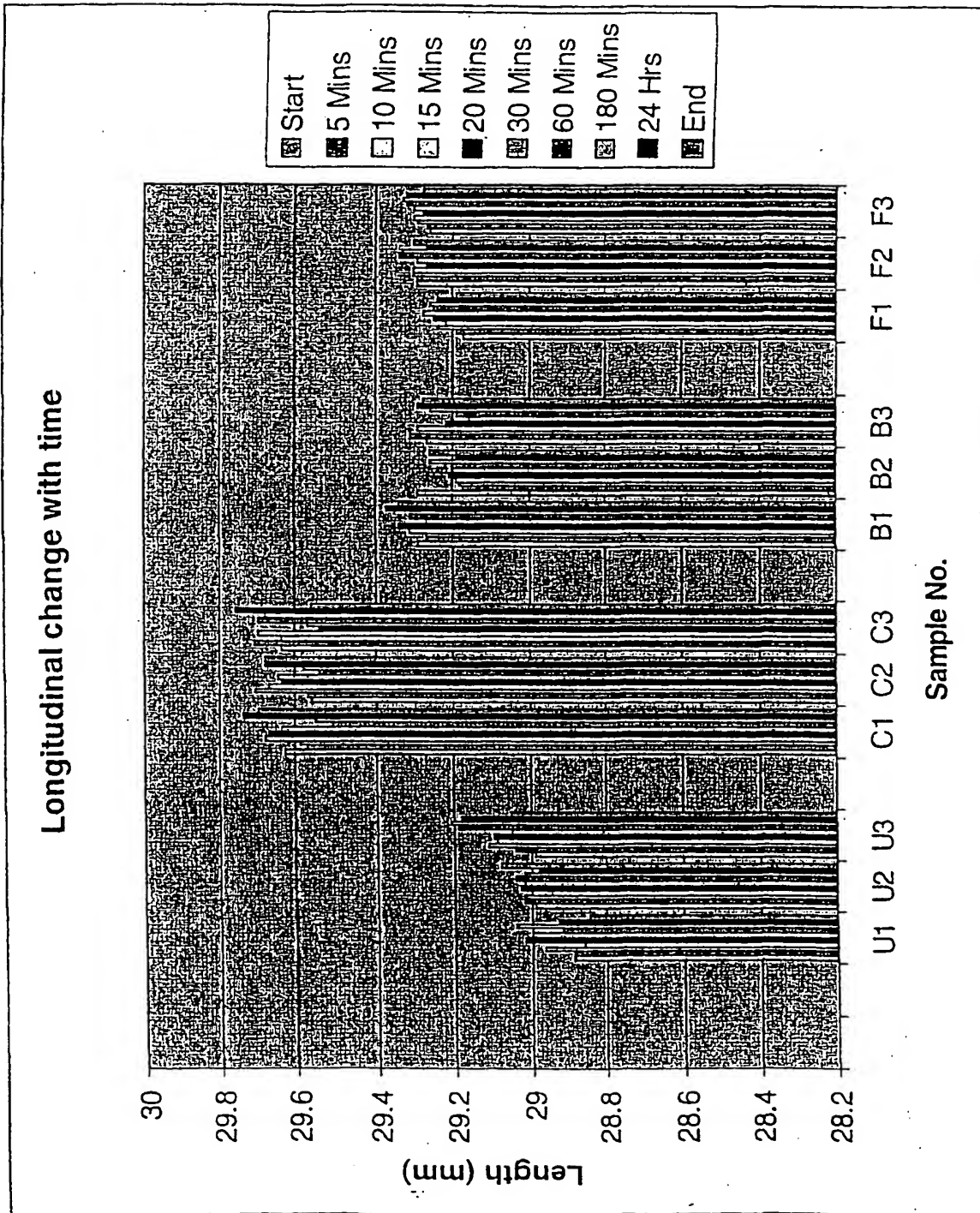


FIG. 2



Longitudinal data in dimensional stability trial.

FIG. 3

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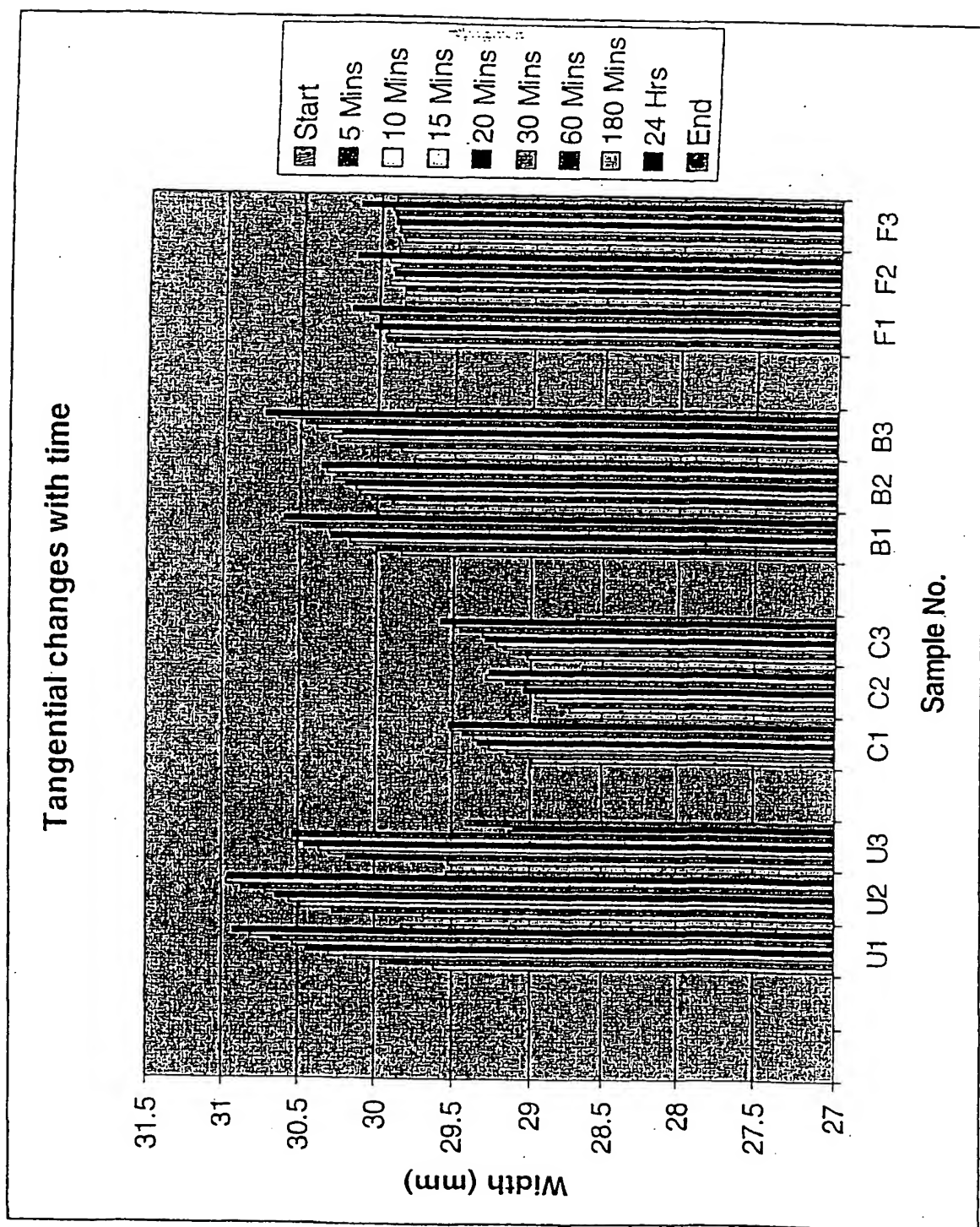


FIG. 4

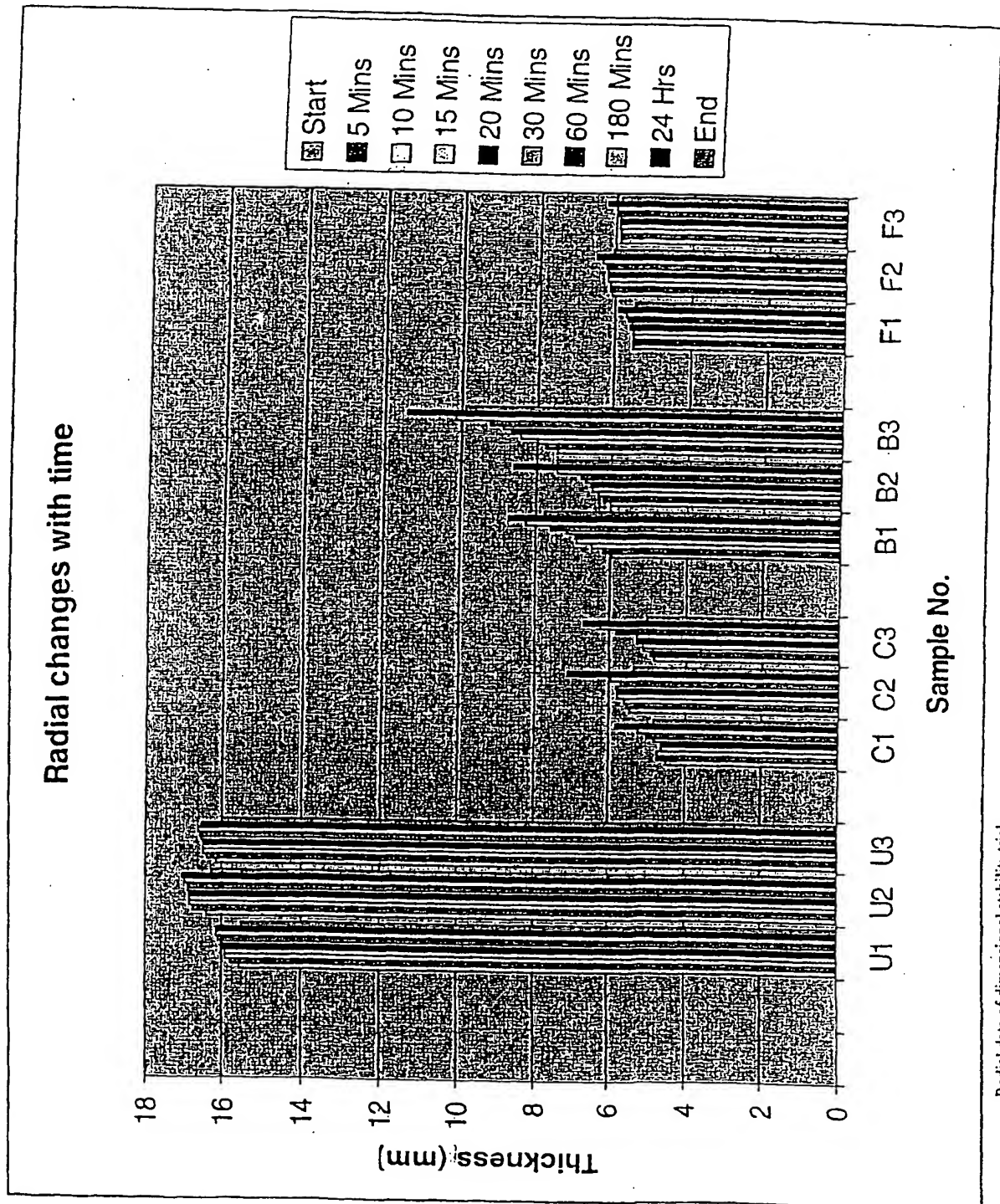


FIG. 5

File Note

RECEIVED 31 MAR 2004

REC/AXD

CR File: 00/00326

Date: 31 March 2004

Name: Branko Hermescec

Department/Company:

Phone No: mob

Fax No:

Subject/Topic/Agreement: Receipt of assignment documents

Branko Hermescec rang to advise me that he had received the assignment documents sent to him this week relating to PCT/AU01/01558.

As on previous occasions, he advised that he would not be signing these documents until he had received a response to his letter to the University.

He is still working at CSIRO in Clayton.



Recorded By: Roberta Stead

12 MAY '97 15:33



PS13

Offer of Employment

Please sign and return the copy of this document to:

The Director of Human Resources,
University of Melbourne,
Parkville, Victoria, Australia, 3052

EMPLOYMENT DETAILS

Title, Given Name(s), Family Name

Mr Branko Hermescec

Employee Number: 475755

Position Number: 9627823

Department: *School of Forestry and Resource Conservation*

Organisation Unit: *School of Forestry and Resource Conservation*

Position Title: *Senior Lecturer (Level C)*

Employment Period: *1 April 1997 to 31 March 2002*

Status: *Full Time*

100.00%

Classification: *Senior Lecturer (Level C)*

Point: *1 of 6*

Salary: *\$52,726 per annum in the range \$52,726 to \$60,797 per annum.*

Type: *Extendible Tenure*

While this offer relates to a specific position and department, you may be required to transfer to other positions in the University which are of at least equal grading and which you are qualified to occupy.

SUPERANNUATION

Tertiary Education Superannuation Scheme - TESS

TESS is a national award Superannuation Scheme for the staff of universities to which the University contributes the equivalent of 3% of your relevant earnings each year. You may also elect to make personal contributions to TESS.

Superannuation Scheme for Australian Universities - SSAU

You are required to join this scheme as a condition of your employment. The University contributes the equivalent of 14% of your salary each year and you are required to contribute 7% of your salary each year to the scheme.

Detailed information about these schemes is contained in the attached conditions leaflet.

MEDICAL CLEARANCE

Your appointment is conditional on a satisfactory medical clearance designed to test whether your state of health or the position you are being offered will put you at risk of occupational illness or injury. The Health and Hazard Assessment Questionnaire (HHAQ) form must be completed and forwarded to the Occupational Health Nurse before you commence employment. Further details on this process are contained in the attached conditions leaflet.

PERFORMANCE APPRAISAL

The University is committed to excellence and has implemented Performance Assessment requiring all staff members to set and review objectives annually with their supervisor. Progression in the incremental range depends on the successful participation in Performance Assessment. You should consult your supervisor and set objectives at the earliest opportunity.

This appointment is made subject to the following awards or policies as amended from time to time:-

- Statutes and Standard Resolutions of the University.
- Personnel Policy and Procedures Manual
- University of Melbourne Enterprise Agreement 1995
- Universities and Post Compulsory Academic Conditions Award 1995
- Other terms and conditions as approved by University Council or by the Australian Industrial Relations Commission.

Authorised on behalf of The Director of Human Resources:

Signed:

Date:

I accept your offer of employment on the conditions set out above, in the letter of offer and in the attached documents. My commencement date will be/was

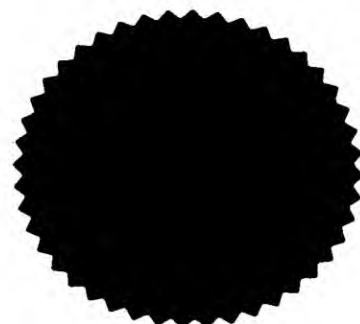
Signed:

Date:

Please sign and return the copy of this document to:
The Director of Human Resources, University of Melbourne, Parkville, Victoria, Australia, 3052

I, VINCENT JOSEPH JULIANO, Notary Public hereby certify this to be a true photocopy of the original it purports to be.

Dated: 26th March 2004.



STATUTE 14.1 - INTELLECTUAL PROPERTY

[Enacted 21/5/96.]

Interpretation

14.1.1 In this statute, unless the contrary intention appears-

"**adaptation**" has the same meaning as that ascribed to it by the *Copyright Act 1968* (Cth) as amended from time to time and shall include (but not be limited to) adaptation into what is commonly known as multimedia format.

"**chairperson**" means the person appointed under section 14.1.4(2).

"**circuit layout**" means a circuit layout as defined by the *Circuit Layouts Act 1989* (Cth) as amended or replaced from time to time.

"**commercial exploitation**" means the application, publication, development, use, assignment, licensing, sub-licensing, franchising, exploitation or other utilisation of intellectual property for the purpose of generating financial or other commercial gains, and "**commercially exploit**", "**commercially exploited**" and "**commercially exploitable**" have corresponding meanings.

"**computer program**" means a computer program as defined by the *Copyright Act 1968* (Cth) as amended or replaced from time to time.

"**copyright work**" means any "artistic work", "literary work", "dramatic work", "musical work", "sound recording", "cinematograph film", "television broadcast", "sound broadcast", "published edition of work" or "photograph", as those terms are defined by the *Copyright Act 1968* (Cth) as amended or replaced from time to time.

"**create**" means produce, invent, develop, generate, discover, make, originate or otherwise bring into existence, and "**creation**", "**creating**" and "**created**" have corresponding meanings.

"**design**" means a design as defined by the *Designs Act 1906* (Cth) as amended or replaced from time to time.

"**eligible layout**" means an eligible layout as defined by the *Circuit Layouts Act 1989* (Cth) as amended or replaced from time to time.

"**intellectual property**" means all rights in relation to any copyright work, circuit layout, eligible layout, design, patent, invention, confidential information, trade secret, know-how, plant variety, or trade mark.

"**invention**" means an invention (whether or not qualifying for registration) under the *Patents Act 1958* (Cth) or the *Patents Act 1990* (Cth).

"**originator**" means any person who creates, whether in or not in conjunction with other persons, any intellectual property.

"patent" means a patent within the meaning of the **Patents Act 1958 (Cth)** or the **Patents Act 1990 (Cth)** as amended or replaced from time to time, and includes a standard patent or a petty patent.

"person" includes a body politic or corporate as well as an individual.

"plant variety" means a plant variety whether or not qualifying for a grant under the **Plant Variety Rights Act 1987 (Cth)** as amended or replaced from time to time.

"student" means a graduate student, an under-graduate student or a person designated as a student as defined in the **Melbourne University Act 1958 (Vic.)** as amended or replaced from time to time.

"the committee" means the intellectual property committee established under section 14.1.4

"the officer" means the intellectual property officer appointed under section 14.1.2.

"trade mark" means a trade mark as defined by the **Trade Marks Act 1955 (Cth)** as amended or replaced from time to time, whether or not registered under that Act.

The intellectual property officer

14.1.2 The vice-chancellor must appoint a person who has expertise in the area of intellectual property to be the intellectual property officer.

Functions of the officer

- 14.1.3 (1) The officer must carry out his or her duties subject to this statute and to any resolution of the Council.
- (2) The officer may do all or any of the following on behalf of the University-
- (a) consult with the originator and make such enquiries as the officer considers appropriate concerning the commercial exploitation of any intellectual property to which this statute applies;
 - (b) apply for protection or registration of, or take any other steps necessary or desirable for securing, maintaining and protecting in Australia or elsewhere throughout the world any intellectual property owned by or licensed to the University under this statute or otherwise;
 - (c) commercially exploit any intellectual property owned by or licensed to the University under this statute or otherwise (whether by itself or in conjunction with or through an authorised third party) upon such terms and conditions as the officer considers appropriate;

- (d) grant to the originator an assignment or a licence of intellectual property owned by or licensed to the University under this statute or otherwise on such terms and conditions as the officer considers appropriate;
- (e) apportion the net proceeds of the commercial exploitation of any intellectual property owned by or licensed to the University under this statute or otherwise having regard to-
 - (i) the costs incurred by the University, the originator and any other person in providing facilities, apparatus, supervision, services and resources for the creation, registration, protection and commercial exploitation of the intellectual property. These costs include but are not limited to any registration fees, legal or patent attorneys' fees, the cost of secretarial, word processing, printing, binding, publishing, distribution, academic and administrative services provided or incurred by or on behalf of the University, the originator and any other person;
 - (ii) the extent to which the University, the originator and any other person has contributed (whether by intellectual input, provision of finance, time, supervision, pre-existing intellectual property, know-how, research facilities and data) to the creation, registration, protection and commercial exploitation of the intellectual property;
 - (iii) the University's policy on earnings from outside work;
 - (iv) any submissions by the originator or any other person who claims an entitlement or interest in the intellectual property;
 - (v) the desire of the University to encourage and reward the creation of intellectual property by persons within the University; and
 - (vi) advice on policy matters pursuant to section 14.1.5 (2).

The intellectual property committee

- 14.1.4 (1) The Council hereby establishes an intellectual property committee comprising-
- (a) the vice-chancellor;
 - (b) the deputy vice-chancellors;
 - (c) the president of the Board;
 - (d) the vice-principal (corporate services);
 - (e) five persons appointed by the Council;
 - (f) one person appointed by the Committee of Convocation;
 - (g) up to three additional members co-opted by the committee;
 - (h) the president of Melbourne University Student Union Inc. or a nominee of the president;
 - (i) one postgraduate student nominated by the president of the University of Melbourne Postgraduate Association Inc.

- (2) After seeking the recommendation of the committee, the Council must appoint from the members of the committee a chairperson to hold office for such period as the Council considers appropriate.

Functions of the committee

- 14.1.5 (1) The committee must carry out its duties subject to this statute and to any resolution of the Council.
- (2) The committee must provide advice to the University and to the officer on policy matters relating to the implementation of this statute.
- (3) In relation to any matter referred to it by the vice-chancellor, the committee has all the powers conferred on the officer by section 14.1.3(2).
- (4) Where the vice-chancellor refers a matter to the committee, the officer must not exercise any of the officer's powers in relation to that matter.

Ownership of intellectual property other than copyright works

- 14.1.6 (1) This section applies to-
 - (a) intellectual property (other than copyright works) created by the originator in pursuance of his or her employment, studies, scholarship or research with or at the University; and
 - (b) intellectual property (other than copyright works) the creation of which has been contributed to substantially by the University (or by any third person on behalf of the University) by way of funding, salary, resources, facilities, apparatus, or supervision.
- (2) The University owns intellectual property to which this section applies.
- (3) The University, the officer or the committee on the University's behalf may require the originator of intellectual property to which this section applies to execute all documents, including an assignment or licence of intellectual property, and do all acts that may be necessary or desirable to give full effect to the provisions of this statute and to protect and commercially exploit intellectual property to which this section applies throughout the world.
- (4) Where the originator is not paid a salary by the University and is required to execute documents or do acts pursuant to sub-section 14.1.6 (3) the University may provide the originator with reasonable remuneration for the time spent by the originator in relation to the execution of any document and the doing of the acts.
- (5) Subject to section 14.1.9, all applications (whether in Australia or overseas) for the registration of a grant of any intellectual property to which this section applies must be in the name of the University.

Duty to report

- 14.1.7 (1) Subject to section 14.1.7(2) any student or member of staff who is an originator of intellectual property (other than in copyright works provided for in sections 14.1.11 and 14.1.12), and any dean or head of department who becomes aware of the creation, exploitation or unauthorised use or infringement of any intellectual property to which

this section applies, must promptly inform the intellectual property officer in writing of all relevant details of the intellectual property including-

- (a) the date upon which the intellectual property was created;
 - (b) the identity of any person or persons who contributed to the creation of the intellectual property;
 - (c) the details of any pre-existing intellectual property which was used in creating the intellectual property;
 - (d) whether any person other than the originator claims any entitlement or interest in the intellectual property;
 - (e) the details of any University facilities or resources used to create the intellectual property; and
 - (f) the details of any known existing or potential use or commercial exploitation of the intellectual property.
- (2) The committee may set down guidelines, procedures and criteria for reporting to the officer the creation, exploitation, unauthorised use or infringement of intellectual property to which section 14.1.6 applies.
- (3) A student or member of staff must not apply for any form of protection for or commercially exploit or otherwise deal with any intellectual property, or do any act or thing in a manner inconsistent with the University's rights under section 14.1.6 or otherwise.
- (4) A student or member of staff must not disclose the details of or use any intellectual property to which section 14.1.6 applies if such disclosure or use is likely to prejudice the validity, protection, enforcement, or commercial exploitation of the intellectual property.

Intellectual property governed by agreements with sponsors

14.1.8 (1) Where-

- (a) a person sponsors research within the University by providing funding for the research; and
- (b) an agreement has been made between that person and the University governing ownership of intellectual property which would otherwise by virtue of section 14.1.6 be owned by the University,

ownership of the intellectual property will be governed by the agreement.

Other agreements

14.1.9 (1) Where the ownership, licensing or exploitation of any intellectual property is governed by any agreement between the University and a student or member of staff or any other person, the provisions of the agreement prevail to the extent of any inconsistency between that agreement and section 14.1.6.

Review of decisions

- 14.1.10 (1) An originator who is dissatisfied with any decision or action of the officer under section 14.1.3(2) may request the committee to review the decision or action.
- (2) The officer, if a member of the committee, must not participate as a member of the committee on the review.
- (3) After providing the originator with an opportunity to be heard, the committee must either confirm or vary the decision or action of the officer and must notify the originator within fourteen (14) days of its decision.

Ownership of copyright in literary works (other than computer programs), dramatic works, musical works and artistic works

- 14.1.11 (1) This section applies to a copyright work which is a literary work (other than a computer program), a dramatic work, a musical work or an artistic work which is created by the author in pursuance of his or her employment by the University as a member of the academic staff of the University after the date of the commencement of this section.
- (2) Subject to sections 14.1.11(3) and (4), ownership of copyright in copyright works to which this section applies is vested, and is deemed to have vested from the date of creation of the work, in the member of the academic staff who is the author of the work and the University is taken to have assigned ownership of the copyright in copyright works to which this section applies to the author.
- (3) From the date of creation of any copyright work to which this section applies the University has -
- (a) an automatic, non-exclusive, royalty-free and irrevocable licence and right to do all or any of the following acts
- (i) to reproduce it in a material form;
 - (ii) to publish it;
 - (iii) to perform it in public;
 - (iv) to broadcast it;
 - (v) to cause it to be transmitted to subscribers to a diffusion service;
 - (vi) to disseminate and otherwise use it;
 - (vii) to make an adaptation of it;
 - (viii) to do, in relation to a work that is an adaptation of the first-mentioned copyright work to which this section applies any of the acts specified in relation to that work in paragraphs (i) to (vi) inclusive;

provided that this licence and these rights are restricted solely to the use of the work for the University's own educational purposes in the delivery of its education programs, including, without limitation, the University's own research, teaching and scholastic endeavours; and

- (b) the right to recover from the income (excluding public lending rights) received by the author of the work any substantial direct costs met by the University in directly contributing to the production of the work.
- (4) Where the University enters into an agreement with a third party concerning the ownership of the copyright in a work to which this section applies, the terms of the agreement prevail only if the author agrees in writing to the terms of the agreement.

Ownership of copyright in subject matter other than literary, dramatic, musical or artistic works.

- 14.1.12 (1) This section applies to copyright in subject matter other than literary, dramatic, musical or artistic works and which are created by a member of the academic staff of the University in pursuance of his or her employment by the University as a member of the academic staff of the University after the date of the commencement of this section.
- (2) The officer is authorised to negotiate contracts of assignment of copyright in copyright subject matter to which this section applies to members of the academic staff in appropriate cases consistent with the principle that the University encourages the creation of copyright subject matter for the greatest possible public benefit whilst safeguarding the educational programs of the University.

Ownership of copyright in computer programs.

- 14.1.13 (1) This section applies to computer programs created by a member of the staff of the University in pursuance of his or her employment as a member of the staff of the University after the date of the commencement of this section.
- (2) Notwithstanding the exclusion of copyright works from sections 14.1.6 and 14.1.7, those sections apply to copyright works which are computer programs to which this section applies.

Transitional Provisions

- 14.1.14 Where before the coming into effect of sections 14.1.11 to 14.1.13 inclusive, the University entered into an agreement with a third party concerning ownership of copyright in a literary work, including a computer program, a dramatic work, a musical work or an artistic work and such a work is created pursuant to that agreement after the coming into effect of those sections, ownership of the copyright in that work is governed by the terms of that agreement and by the University's statutes concerning intellectual property in force at the date of that agreement.

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